Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in this application.

Listing of Claims:

Claims 1-19 (Canceled)

20. (Currently Amended) ~~The~~ A control unit ~~of claim 19~~ for controlling a safety-critical application, the control unit comprising:

a microcomputer;

a monitoring unit including a first arrangement for measuring a quiescent current of the microcomputer, and including a second arrangement for applying a test data input signal, for processing test data output signals and for comparing a corresponding test data output signal of the microcomputer to a corresponding test data output signal of the monitoring unit;

at least one quiescent current handshake line running between the first arrangement and the microcomputer for controlling the measuring of the quiescent current;

at least one test data signal transmission line running between the second arrangement and the microcomputer; and

peripheral circuits;

wherein:

the first arrangement includes an IDDQ measuring circuit, a voltage supply, an IDDQ measuring run control, and a control system of the monitoring unit;

the at least one quiescent current handshake line includes two handshake lines running from the IDDQ measuring run control to the microcomputer;

the first arrangement and the microcomputer are coupled by the two handshake lines and at least one voltage supply line running from the voltage supply to the microcomputer; and

at least one of the at least one voltage supply line runs through the IDDQ measuring circuit.

21. (Previously Presented) The control unit of claim 20, wherein the at least one voltage supply line includes two voltage supply lines running between the voltage source and the microcomputer, and one of the two voltage supply lines runs through the IDDQ measuring circuit.

Claim 22 (Canceled) .

23. (Previously Presented) The control unit of claim 20, wherein the first arrangement includes an initialization circuit for receiving an initialization signal from the voltage source after the control unit is switched on, and for subsequently transmitting an enable signal to the IDDQ measuring run control to enable an IDDQ measurement.

24. (Currently Amended) The control unit of claim ~~19~~ 20, wherein:

the second arrangement includes a test data signal generator for applying the test data input signal to the microcomputer, a response generator for processing the test data input signal and for forming the corresponding test data output signal, a test data register for receiving the test data input signal and for transmitting the corresponding test data output signal, and a comparator for comparing the corresponding test data output signal of the microcomputer to the corresponding test data output signal of the monitoring unit; and

the at least one test data transmission line runs between the test data register of the second arrangement and the microcomputer.

25. (Previously Presented) The control unit of claim 24, wherein the at least one test data transmission line includes two test data transmission lines.

26. (Previously Presented) The control unit of claim 24, wherein the second arrangement includes a trigger generator for determining an instant at which the corresponding test data output signal of the microcomputer is available at the comparator, the microcomputer being error-free.

27. (Previously Presented) The control unit of claim 24, wherein the second arrangement includes an error counter for counting an error if at least one of the following is satisfied: the corresponding test data output signal of the microcomputer is not consistent with the corresponding test data output signal of the monitoring unit; and the corresponding test data output signal of the microcomputer is available at the comparator at a different instant than one determined by the trigger generator.

28. (Currently Amended) ~~The~~ A control unit ~~of claim 27~~ for controlling a safety-critical application, the control unit comprising:

a microcomputer;

a monitoring unit including a first arrangement for measuring a quiescent current of the microcomputer, and including a second arrangement for applying a test data input signal, for processing test data output signals and for comparing a corresponding test data output signal of the microcomputer to a corresponding test data output signal of the monitoring unit;

at least one quiescent current handshake line running between the first arrangement and the microcomputer for controlling the measuring of the quiescent current;

at least one test data signal transmission line running between the second arrangement and the microcomputer; and

peripheral circuits;

wherein:

the second arrangement includes a test data signal generator for applying the test data input signal to the microcomputer, a response generator for processing the test data input signal and for forming the corresponding test data output signal, a test data register for receiving the test data input signal and for transmitting the corresponding test data output signal, and a comparator for comparing the corresponding test data output signal of the microcomputer to the corresponding test data output signal of the monitoring unit;

the at least one test data transmission line runs between the test data register of the second arrangement and the microcomputer;

the second arrangement includes an error counter for counting an error if at least one of the following is satisfied: the corresponding test data output signal of the microcomputer is not consistent with the corresponding test data output signal of the monitoring unit; and the corresponding test data output signal of the microcomputer is available at the comparator at a different instant than one determined by the trigger generator; and

there is a plurality of response thresholds for use with the error counter, and a different reaction results by exceeding each response threshold of the plurality of response thresholds results.

29. (Currently Amended) ~~The~~ A control unit ~~of claim 25~~ for controlling a safety-critical application, the control unit comprising:

a microcomputer;

a monitoring unit including a first arrangement for measuring a quiescent current of the microcomputer, and including a second arrangement for applying a test data input signal, for processing test data output signals and for comparing a corresponding test data output signal of the microcomputer to a corresponding test data output signal of the monitoring unit;

at least one quiescent current handshake line running between the first arrangement and the microcomputer for controlling the measuring of the quiescent current;

at least one test data signal transmission line running between the second arrangement and the microcomputer; and

peripheral circuits;

wherein:

the second arrangement includes a test data signal generator for applying the test data input signal to the microcomputer, a response generator for processing the test data input signal and for forming the corresponding test data output signal, a test data register for receiving the test data input signal and for transmitting the corresponding test data output signal, and a comparator for comparing the corresponding test data output signal of the microcomputer to the corresponding test data output signal of the monitoring unit;

the at least one test data transmission line runs between the test data register of the second arrangement and the microcomputer;

the at least one test data transmission line includes two test data transmission lines; and

the ~~first~~ second arrangement includes an initialization circuit for receiving an initialization signal from the voltage source after the control unit is switched on, for subsequently synchronizing the monitoring unit with the microcomputer, and for then activating the test data signal generator and the error counter.

Claims 30-33 (Canceled).

34. (Currently Amended) ~~The~~ A method ~~of claim 31~~ for testing a microcomputer of a control unit for controlling safety-critical application, the control unit including the microcomputer, a monitoring unit, and peripheral circuits, the method comprising:

measuring a quiescent current of the microcomputer, the measuring of the quiescent current being controlled by the monitoring unit;

exchanging at least one handshake signal between the microcomputer and the monitoring unit;

applying a test data input signal to the microcomputer;

determining a first test data output signal; and

comparing a second test data output signal of the microcomputer to the first test data output signal of the monitoring unit;

wherein a quiescent current measurement corresponds to an IDDQ measurement, and

wherein a clock generator is stopped by the microcomputer during at least one of: the IDDQ measurement; and the comparing of the second test data output signal of the microcomputer with the first test data output signal of the monitoring unit.

35. (New) ~~The~~ A method ~~of claim 31~~ for testing a microcomputer of a control unit for controlling safety-critical application, the control unit including the microcomputer, a monitoring unit, and peripheral circuits, the method comprising:

measuring a quiescent current of the microcomputer, the measuring of the quiescent current being controlled by the monitoring unit;

exchanging at least one handshake signal between the microcomputer and the monitoring unit;

applying a test data input signal to the microcomputer;

determining a first test data output signal; and

comparing a second test data output signal of the microcomputer to the first test data output signal of the monitoring unit;

wherein a quiescent current measurement corresponds to an IDDQ measurement, and

wherein the test data input signal of the monitoring unit is generated by a test data signal generator via a feedback shift register.

36. (Previously Presented) The method of claim 35, wherein the test data output signal of the monitoring unit is generated by a response generator using a Reed-Muller code.

37. (New) The method of claim 34, wherein the second test data output signal of the microcomputer is compared to the first test data output signal of the monitoring unit while the control unit is operating.

38. (New) The method of claim 35, wherein the second test data output signal of the microcomputer is compared to the first test data output signal of the monitoring unit while the control unit is operating.